What is claimed is:

1. A heat exchanger comprising:

a fin member composed of a plurality of fins arranged in parallel, the fins having both opposing end surfaces provided with a plurality of engagement grooves in parallel and at regular spaces; and

a meandering pipe main body including:

a plurality of straight pipe sections to be disposed in the engagement grooves of the fin member, the plurality of straight pipe sections arranged in parallel and spaced by an opposing gap,

a pair of meandering sections formed such that the plurality of straight pipe sections are joined through bend portions, the pair of meandering sections arranged so as to be opposed to each other through an insertion gap for fin member, and

a connection pipe for connecting the one meandering section and the other meandering section opposing to each other,

wherein the fin member is placed in an inserting manner within the insertion gap for fin member formed between the one meandering section and the other meandering section of the meandering pipe main body, and wherein the straight pipe sections of the one meandering section are disposed in the engagement grooves on one end surface of the fin member, and wherein the straight pipe sections of the other meandering section are disposed in the engagement grooves on the other end surface of the fin member in a secured manner.

2. A heat exchanger comprising:

a plurality of fin members composed of a plurality of fins arranged in parallel, the fins having both opposing end surfaces provided with a plurality of engagement grooves in parallel and at regular spaces; and

a meandering pipe main body including:

a plurality of straight pipe sections to be disposed in the engagement grooves of the fin members, the plurality of straight pipe sections arranged in parallel and spaced by an insertion gap,

a pair of meandering sections formed such that the plurality of straight pipe sections are joined through bend portions, the pair of meandering sections arranged so as to be opposed to each other through an opposing gap for fin members, and

a connection pipe for connecting the one meandering section and the other meandering section opposing to each other,

wherein the opposing straight pipe sections of the one and the other meandering sections of the meandering pipe main section are paired, and wherein within the plurality of insertion gap for the fin members formed in a tiered manner between a plurality of pair of adjacent straight pipe sections, each fin member is placed so as to lie astride the one and the other meandering sections, and wherein the straight pipe sections of the one meandering section are disposed in the engagement grooves on one end surface of the fin members, and the straight pipe sections of the other meandering section are disposed in the engagement grooves on the other surface of the fin members in a secured manner.

3. The heat exchanger as claimed in claim 1, wherein at least one of the one meandering section and the other meandering section is provided with the fin member outside opposing sections, and wherein outer surfaces of the straight pipe sections are disposed in a secured manner in the engagement grooves of the fin member.

4. The heat exchanger as claimed in claim 2, wherein the fin member is provided to an outside of at least one of the straight pipe sections arranged at each end among the plural pairs of the straight pipe sections of the one and the other meandering sections, and wherein the outer surfaces of the straight pipe sections are disposed in and secured to the engagement grooves of this fin member.

5. The heat exchanger as claimed in any one of claims 1 to 4, wherein the fin member is composed of a plurality of plate fins arranged in parallel, and wherein the engagement grooves are provided at both opposing ends of each plate fin.

6. The heat exchanger as claimed in any one of claims 1 to 4, wherein the fin member is formed such that a plate is bent into a corrugated shape to form a corrugated fin, and wherein the engagement grooves are provided at each opposing end surface at a bend surface side of the corrugated fin.

7. The heat exchanger as claimed in any one of claims 1 to 4, wherein the fin member is formed such that a plate is bent into a corrugated shape to form a corrugated fin, and wherein the engagement grooves are provided at both opposing end surfaces at a non-bend surface side of the corrugated fin.

8. The heat exchanger as claimed in any one of the claims 1 to 7, wherein

the engagement grooves are formed by cutting off the fin member in a convex shape.

9. The heat exchanger as claimed in any one of the claims 1 to 7, wherein the engagement grooves are formed by press-deforming the fin member into a convex shape.

10. The heat exchanger as claimed in claim 9, wherein the fin member is press-deformed into the convex shape such that collars projecting toward both sides of each fin associated with the press-deformation are near to or contact each other between the adjacent fins, and wherein the collars are brought in surface contact with an outer peripheral surface of the meandering pipe main body.

11. The heat exchanger as claimed in any one of claims 1 to 9, wherein the meandering pipe main body is so constructed that straight pipe sections formed to have a width larger than that of the engagement grooves are press-inserted into the engagement grooves.

12. The heat exchanger as claimed in any one of claims 1 to 10, wherein the meandering pipe main body is so constructed that the straight pipe sections are formed in compressed shapes in cross section, and wherein a shorter diameter of each compressed shaped straight pipe sections is made smaller than the width of the engagement grooves, and wherein a longer diameter of each compressed shaped straight pipe sections is made larger than the width of the engagement grooves, and wherein after the compressed shaped straight pipe sections are disposed in the engagement grooves such that the longer diameter is oriented to a bottom-to-opening direction, the straight pipe sections are expanded to allow the outer peripheral surfaces thereof to be fit into the engagement grooves.

13. The heat exchanger as claimed in claim 1, wherein the meandering pipe main body is so constructed that the straight pipe sections of the one and the other meandering sections are curved into arc shapes to allow the opposing surfaces of the straight pipe sections swell inwardly, and the arc shaped straight pipe sections are engaged in the engagement grooves linearly by an engagement means.

14. The heat exchanger as claimed in claim 1 or claim 12, wherein the

meandering pipe main body is so formed that the opposing bend portions of the one and the other meandering sections are securely clipped by clipping members.

15. The heat exchanger as claimed in claim 3 or claim 4, wherein the fin member is securely clipped to at least one of the outsides of the one and the other meandering sections by clipping members.

16. The heat exchanger as claimed in any one of claims 1 to 14, wherein the meandering pipe main section and the fin member after disposing the straight pipe sections in the engagement grooves are filled with molten resin material at a mutual contact portion to bond each other.

17. The heat exchanger as claimed in any one of claims 1 to 16, wherein the outer peripheral surface of the meandering pipe main body is covered by a resin layer.

18. The heat exchanger as claimed in claim 17, wherein the resin layer applied to the outer peripheral surface of the meandering pipe main body is made of a thermoplastic resin material to be fused upon heating after the straight pipe section are disposed in the engagement grooves in order for the resin layer to be adhered to the engagement grooves of the fin member.

19. The heat exchanger as claimed in any one of claims 1 to 18, wherein the meandering pipe main body and the fin member after the straight pipe sections are disposed in the engagement grooves have an outer surface thereof subject to a coating process.

20. The heat exchanger as claimed in any one of claims 1 to 19, wherein the meandering pipe main body is so constructed that the connection pipe for connecting the one and the other meandering sections connected to straight pipe sections arranged in parallel, is twisted in a circumferential direction with respect to axis directions of the straight pipe sections to narrow a distance between the one and the other meandering sections.

21. The heat exchanger as claimed in any one of claims 1 to 19, wherein the meandering pipe main body is so constructed that the connection pipe between the

one and the other meandering sections at one of the straight pipe section sides is curved outwardly while the connection pipe is twisted in the circumferential direction with regard to the axis directions of the straight pipe sections to narrow the distance between the one and the other meandering sections, and wherein the straight pipe sections of the one and the other meandering sections are arranged in parallel to each other.

22. The heat exchanger as claimed in any one of claims 1 to 21, wherein the fin member is so formed that end portion sides of each fin are bent to form inclined surfaces.

23. The heat exchanger as claimed in any one of claims 1 to 22, wherein the fin member is so formed that each fin is provided with a plurality of flow channels.